

## “See” Here “Through Ears”

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### **Abstract**

**Background:** We know that, “Ear”- is a sensory organ, helps in transmission of auditory stimulus for perception, refers to the brain’s ability of interpreting and creating impression of sounds. During the process of tractography, on identifying the fibres in “Ventral” stream pathways for auditory perception, we the “TEAM NeurON” found an interesting connection between “Auditory cortex (Brodmann Areas 41 and 42) with Frontal Eye Field (Brodmann Area 8)”.

**Objectives:** Aimed to identify the neural structural connectivity between “Auditory cortex with Frontal Eye Field” and correlate its functional importance, using “Diffusion Imaging fiber Tractography”.

**Methods:** The observational analysis, used ten healthy adults, ultra-high b-value, diffusion MRI Datasets from an Open access platform. The datasets, ranging from both sexes, between 20–59 years, with mean age of 31.1 years. The analysis process includes, data processing and fiber tractography using software tools.

**Results:** The fibers were traced, and confirmed its extension from “Auditory cortex to Frontal Eye Field (FEF), especially to the “Area 8B” (PEEF – Premotor Ear Eye Field). The area FEF (PEEF), involves in control the eyeball gaze movements and helps to discriminate the source of auditory stimulus.

**Conclusion:** These new observations, through an insight knowledge to understand the structural existence and functional correlations between “Auditory cortex with Frontal Eye Field (FEF), to targeting the source of sound stimulus, and making the possible results in generation of eyeball saccades.

**Keywords:** Tractography, Frontal Eye field, Saccadic eye movements, auditory pathways, Premotor Ear Eye Field.